Common Raven
(Corvus corax)

Nest and Habitat Characteristics

The Raven is classified by some as a raptor, and not by others. It is included in this bulletin because its food habits are much the same as some of the raptors that are included.

The Raven is well distributed throughout the West and probably nests in every western state. They range the rugged mountainous country but are apparently equally at home over the rolling, sage-covered hills of lower elevations. They commonly compete with Magpies and Golden Eagles for rabbits or other mammals crushed on the highways.

The Common Raven nests in cavities in cliffs, in a variety of different types of trees, both coniferous and deciduous, and on different types of man-made structures, including powerline poles. They may construct their own nests, which are fair sized structures of medium-sized twigs, or they may appropriate the old nests of other raptors. They seem to prefer to nest under some type of rocky overhang than completely exposed to the elements. The nest is usually lined with shredded bark, grasses, or other fine material.

Nest Survey Methods

Raven nests are usually found while searching for other raptor nests, either in cliffs or in tree stands. Aerial flights usually turn up a few Raven nests in cavities or on ledges of cliffs where the observer may be searching for Golden Eagle or hawk nests. Wherever adults are observed during the nesting season, there is probably a nest nearby in a rocky outcropping or other suitable site. If the observer watches the birds, they will usually go directly to the nest site. With a little experience with any raptor, the biologist eventually learns about how far from its nest a raptor will range and how the bird behaves in the vicinity of its nest, especially when an intruder approaches. Behavior patterns will vary somewhat, depending on whether the nest is in a cliff or canyon, or whether it is in open country.

Fig. 95. A usual nesting site of the Common Raven in a cavity in a cliff.

Fig. 96. A Raven at nest on a ledge on a cliff face, showing general nest structure.

Surveys for Owl Nests and/or Territories. Many species of owls inhabit the public lands of the West, but because of their nocturnal habits it is very difficult to locate the birds and their nests, especially the smaller and more secretive species. Owls may nest in holes or cavities of cliffs or trees, in nests constructed by other birds, on the ground, or in holes in the ground. The biologist should become knowledgeable of the different nesting requirements of the various species so that he may make specific species nest surveys or watch for them during other raptor surveys. In searching for owls it may be advisable to survey by habitat types, i.e., look for owls nesting on, or in, the ground, or owls nesting in trees in other birds' nests, or owls nesting in cavities in trees.

Owls that normally use small cavities such as flicker holes in cottonwoods, saguaro cacti, etc., include the Elf Owl, Screech Owl, Whiskered Owl, Ferruginous Owl, Flammulated Owl, Boreal Owl, Saw-whet Owl, and Pygmy Owl. Owls that use larger cavities, such as those created by broken branches or tree trunks, include the Great Horned Owl, Barred Owl, Northern Spotted Owl, and the Hawk Owl. The Hawk Owl also sometimes uses the old stick nests of other birds.

Owls that commonly use the stick nests of other birds include the Great Horned Owl, Long-eared Owl, Great Gray Owl, and Hawk Owl. The Long-eared Owl commonly uses old Magpie or Cooper's Hawk nests, while the Great Horned Owl and Great Gray Owl utilize old Raven nests and other larger raptor nests.

Ground-nesting owls include the Burrowing Owl, Short-eared Owl, and Snowy Owl. Burrowing Owls utilize the burrows of prairie dogs, rabbits, badgers, or other hole-digging rodents. The Short-eared Owl nests in grasses, weeds, or shrubby areas in practically any grassy location. No nest is constructed. The Snowy Owl of the North nests amongst the lichens or in grassy areas of the tundra.

Barn Owls will nest in a variety of man-made structures, including old abandoned cement plants, mining buildings, barns, silos, and houses, as well as in cavities in dirt banks or cliffs.

Surveying of nesting owls is best accomplished during the period of breeding and egg-laying when most owls will respond to an imitation of their own hoot or call. The owl's nest can generally be assumed to be in the vicinity of the owl which has been located by its responding call (there is no way short of time consuming daylight searches and observations to differentiate between mated and unmated owls that may respond). Once the responding owls' locations have been plotted on a map, searches may be made in daylight and nests located. Caution should be used in soliciting responses from owls

during the daytime as aerial predators (accipiters) may be attracted which could destroy either the adult owls or their young.

If the biologist desires to determine all species of owls using a particular woodlot or canyon by using taped owl calls, he should start his survey by playing the tape recorder or using voice imitations for smaller owls first and then gradually proceed with calls for the larger owls. The Great Horned Owl call should be the last one used. Reversing this procedure usually produces poor results, since larger owls intimidate and sometimes prey on smaller owls, making them reluctant to answer a call if a large owl is thought to be in the vicinity.

Great Horned Owls are fairly easy to survey in areas where deciduous trees predominate because the owls begin nesting in late February or early March when trees are still leafless, making it fairly easy to see the adult owl sitting on the nest. This, of course, is not true in coniferous tree stands. Nests can usually be located by driving the available roads and examining all stick nests with the aid of binoculars. Great Horned Owls create a conspicuous hump on a stick nest that is easily seen. Great Horned Owls also nest in cavities in cliffs. Such nest sites may or may not exhibit "whitewash" excrement from the young, depending on the type of cavity. Throwing objects at holes suspected of containing nesting owls will frequently cause the birds to flush, but not always. Owls will often use junipers and other conifers for nest sites, and in such places will need to be surveyed on an individual site basis, searching groves of trees for any type of stick nest that could be used. Even old Magpie nests are sometimes used by Great Horned Owls and other species. Striking trees with a stick or other object will often cause small owls, such as Saw-whet Owls, to reveal themselves if they are nesting or hiding in small cavities in trees.

In searching for owls, one should watch for pellets at the base of trees or cliffs. All birds of prey form pellets from the indigestible portion of their food and these are periodically regurgitated by the birds. Researchers can determine many of the food habits of the birds by studying the pellets, and they are also an important clue to the presence of owls or other raptors. Barn Owls, for example, that nest in cliffs, or banks, will leave a scattering of pellets beneath their roosting or nesting hole, making it easier to detect their presence.

In surveying for the presence of owls and/or their nests, there are five recommended procedures that may be used. In discussing nest survey methods for the various species of owls, these standard methods will be referred to.

Suggested Survey Methods

Survey Method No. 1. Drive all available roads in the area and examine all old stick nests observed in trees or bushes. With the aid of binoculars or spotting scope the observer can usually determine whether or not there is an owl sitting on the nest, especially one of the larger owls. If there is any question, you should approach the nest for closer examination. If roads are not available, you may need to walk close enough to examine stands of deciduous trees scattered around the prairie or desert.

Survey Method No. 2. In coniferous stands, make a systematic search of the trees to detect the presence of any owls or old nests that may be suitable for their use. In dense conifer stands the nests of Cooper's Hawks, Goshawks, and Sharp-shinned Hawks are commonly used for nesting by the larger owls. Where juniper trees or other conifers are scattered across an area, you will need to examine them on an individual tree or clump basis. Ravens, Crows, Magpies, Red-tailed Hawks, and Swainson's Hawks frequently nest in such trees, and any of these nests are suitable nesting sites for owls such as the Great Horned Owl, Great Gray Owl, and Long-eared Owl.

Survey Method No. 3. Keep watch for any trees, either living or dead, that contain woodpecker or flicker holes or any type of natural cavity created by accident or decay. On an individual tree basis, use a club or other device to strike the trunk of any tree that contains a hole or cavity while watching the hole for the appearance of a small owl. Strike the trunk many times, since some species of owls like the Saw-whet sometimes take some arousing. If an owl does not appear at the opening, it *probably is not being used for nesting or roosting, but you cannot be sure.* For most purposes, if a bird does not appear, assume there is not one present. Trying to climb to each individual hole can be time consuming and usually not worth the effort.

Survey Method No. 4. Drive all available roads while watching for any type of rodent colony, especially prairie dogs and ground squirrels. Map all prairie dog colonies as potential nesting sites for Burrowing owls and examine all such colonies with binoculars for the presence of Burrowing owls, which often sit on the dirt mounds throughout the day. Also, during the appropriate period, the young owls may be seen with just their heads protruding above the ground surface. Burrowing owls sometimes nest in isolated holes that may occur anywhere on the desert floor. Keep an eye out for such birds.

Short-eared Owls may be found in grassy, sagebrush, marshy, or wet meadow areas throughout the West. The nest is in a slight depression and usually lined with grass and weedstalks. These owls are primarily active at dusk and early dawn but sometimes hunt during the day, especially on cloudy days. Since they are quite widespread through a variety of habitats, it is generally feasible to try to survey for them only in the more likely locations, such as areas of valleys having relatively dense grass stands and around marshy areas. Clap your hands, or otherwise produce loud noises as you walk through the likely-looking areas and you will frequently flush one or more of these owls. Also, watch for these birds whenever you are conducting inventories for other wildlife or when you are driving along old trails leading through grassy habitats. They will usually flush from about 30 to 50 yards ahead of moving vehicles.

Snowy Owls, living in northern tundra, are quite readily found with the use of aircraft during their nesting season. Their white forms, while sometimes partially blending with surrounding rocks and vegetation can still be discerned once an observer becomes trained to look for them. Keep an eye out for these birds while routinely doing other resource surveys, or make special flights if you are particularly concerned about relative populations in a specific area.

Survey Method No. 5. Obtain taped bird calls from the National Audubon Society or other sources and play back these calls at appropriate crepuscular or nocturnal periods to solicit responses from specific species. For a general owl survey, play the calls for the smaller species of owls first and end up later playing the calls of the larger owls. Hearing the calls of the larger owls might intimidate the smaller owl species and they may not respond, since they serve as prey to some of the larger owls. Driving along back-country roads and stopping about every one-quarter mile to play the calls will usually provide the biologist with considerable information about the species and abundance of owls in the area. Trial and error efforts will usually provide the biologist with the most appropriate methods to use for his particular part of the country and for the species involved.

Use of taped or voice calls for Northern Spotted Owls has proved to be very effective in Oregon. At dusk, night, or morning the caller regularly emits the call at likely looking spots and then waits for a few minutes for a response. This is repeated at periodic intervals as he proceeds through the length of the suitable habitat. Responses are mapped and the locations later checked for possible nests.

Great Horned Owl
(Bubo virginianus)

Fig. 97. Great Horned Owl.

Nest and Habitat Characteristics

Great Horned Owls are found throughout the West in deserts, forests, canyons, mountains, and open country. They are universal in distribution and will nest on practically any old nest structure that will hold the incubating bird, as well as in a wide variety of cavities in both cliffs and trees. From one to four eggs are laid, generally from late January to late March.

Nest Survey Methods

Use suggested Methods No. 1, 2, and 5.

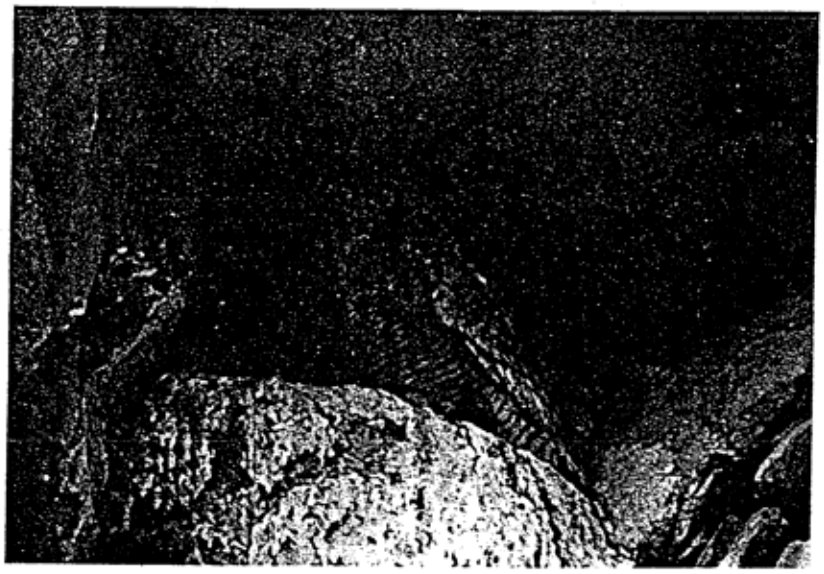


Fig. 98. Typical tree and cliff nesting sites for the Great Horned Owl.

Short-eared Owl
(Asio flammeus)

Fig. 99. Short-eared Owl.

Nest and Habitat Characteristics

Short-eared Owls may be found in a variety of habitats throughout the West, including grassy, sagebrush, marshy, and wet meadow areas. The nest may be placed in any of these habitats and consists of a slight depression that may be lined with grass or weedstalks. Sometimes the eggs are laid with little apparent effort to form a nest bowl. They always nest on the ground and may be flushed as the observer drives or walks through suitable habitats. It seems to nest more frequently around marshy or dense grass areas. This is one of the few owl species that frequently hunts during daylight hours, especially on dark, cloudy days.

Nest Survey Methods

Use suggested Methods 4 (Short-eared Owl portion) and 5.

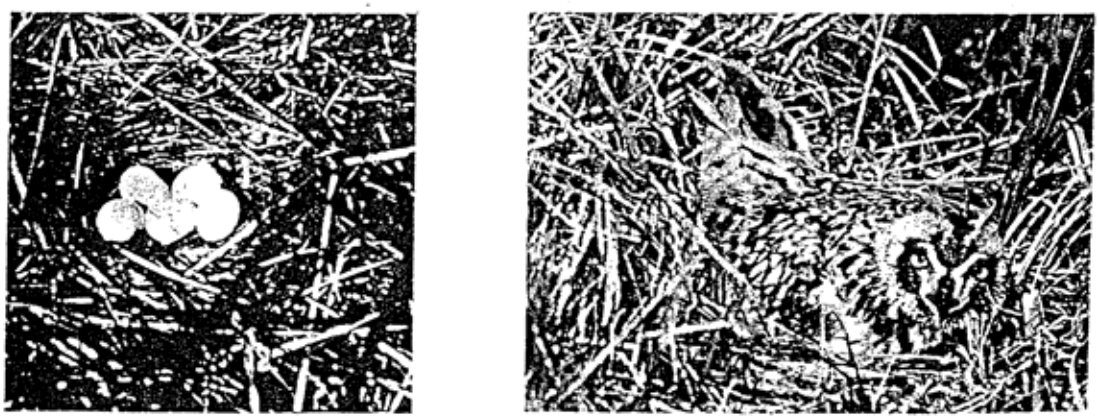


Fig. 100. Typical nesting sites for Short-eared Owls.

Long-eared Owl
(Asio otus)

Fig. 101. Long-eared Owls.

Nest and Habitat Characteristics

This owl may be found in any area of the West where there is sufficient tree or brush growth to give it shelter for its nest and concealment during the day. It may be found in dense groves of coniferous trees in mountainous regions or in tree belts scattered along prairie streams. It seems to prefer areas having dense brush patches for roosting and is one of the most nocturnal of all owls. It usually uses an old hawk, squirrel, raven, or magpie nest as its nesting site. Old Crow, Raven, or Magpie nests in clumps of junipers or thickets of locust, willows, or other brush are commonly used. This owl has been *reported* to very rarely construct a nest of its own, usually a shabby structure composed of twigs of willow, aspen, etc. The birds have an uncanny capability for concealment. An old nest may appear completely empty, but when approached closely an owl will suddenly fly from the nest, coming as if from nowhere.

Nest Survey Methods

Use suggested Methods No. 1, 2, and 5. These birds sit very "tight" on the nest. Often, the surveyor needs to rap on the nest tree, or even the nest, before the bird will reveal itself. Every potential nest site must be examined closely; distant evaluations with binoculars usually will not reveal the birds.

Fig. 102. Nest site of a Long-eared Owl in an old Magpie nest in a locust thicket in Colorado.

Fig. 103. Female Long-eared Owl defending young in old Magpie nest in northern Colorado.

Spotted Owl
(*Strix occidentalis sp.*)

Fig. 104. Northern Spotted Owl.

Nest and Habitat Characteristics

There are three subspecies of Spotted Owls that may be found on public lands, i.e., Northern Spotted Owl (*Strix occidentalis caurina*), Mexican Spotted Owl (*Strix occidentalis lucida*), and the California Spotted Owl (*Strix occidentalis occidentalis*). The various species nest in different habitats, depending on their location in the West. The Northern Spotted Owl occurs primarily in heavily forested areas of western Oregon, Washington, and British Columbia. The California Spotted Owl is found on the west slope of the Sierra Nevada in forests at elevations of 2500 - 6600 feet and onto the east slope of the Sierras in the mountains north of Lake Tahoe near the California-Nevada border. The Mexican Spotted Owl ranges as far north as central Colorado, extending south along the foothills and adjacent areas east of the Front Range, through the mountainous central and southern part of the state and into eastern Arizona and New Mexico. The Guadalupe Mountains of southern New Mexico and western Texas represent the farthest southeastern extension of its range in the United States.

The Northern Spotted Owl nests exclusively in old-growth timber, usually in cavities created at the broken tops of old trees. Such "barber chair" platforms, or cavities, rarely occur in sturdy, dense stands of second growth forest. This sub-species is apparently habitat specific for nesting in the old-growth type.

Nests of the California Spotted Owl have been found on bare ground but are more often situated in trees, tree hollows and natural cliff-side cavities. One nest in Ventura County, California, which owls used repeatedly, was discovered in a roomy cavity about fifteen feet from the base of a 200-foot, north-facing granite cliff in a narrow gorge of a steep canyon. In another area, a hollow log was apparently used as a nesting site. In Riverside, California, owls laid one set of eggs on the floor of a small cave in a clay bank; another set was found at the base of a large rock on the bare ground. (17).

In Arizona and New Mexico, Mexican Spotted Owls are reported to have either constructed and/or renovated old hawk nests. The amount of actual construction by the owls is still questionable, since the basic structure usually is that of an abandoned raptor nest. The owls in New Mexico are also reported to sometimes nest in shaded fissures or cavities in cliffs in narrow canyons. They may also use old eagle or raven nests, especially in steep canyons with north-facing slopes.

Spotted Owls are generally very docile during human investigations of their nests, eggs, or young. They will sometimes perch within a few feet of the observer with little show of concern. Spotted Owls usually lay only two eggs, while three eggs is not uncommon. Four eggs are very rare.

Juvenile Spotted Owls leave the nest at a very early age, though they are still cared for by the adults. Therefore, a nest may be recently active, but the young may simply be sitting in an adjacent tree, or elsewhere in the nest tree.

The Spotted Owl is sedentary, heat intolerant, and almost totally nocturnal. Its habitat requirements reflect these characteristics.

Nest Survey Methods

Use Suggested Methods No. 2 (insofar as systematic searches of owls in suitable old-growth forest is concerned) and No. 5 (specifically calling for Spotted Owls).

Fig. 105. Typical old growth forest used for nesting by Northern Spotted Owls.

Fig. 106. A common nesting site for the Northern Spotted Owl is the cavity created when the top breaks off an old Douglas Fir tree in a dense old-growth stand.

Fig. 107. Young Northern Spotted Owls leave the nest early and perch on branches until ready to fledge.

Great Gray Owl
(Strix nebulosa)

Fig. 108. Great Gray Owl.

Nest and Habitat Characteristics

This species is found primarily in Canada and the northern latitudes of the United States. It is very commonly found in deciduous forests of poplar, birch, or aspen, or mixtures of these trees with conifers. It often uses the old nests of Goshawks, Red-tailed Hawks, Raven, or Broad-winged Hawks for its nesting site. The nest may vary from 10 to 60 feet above the ground, depending largely on what old nests are available and the tree type present. Unlike other owls, it sometimes brings fresh green sprigs or needles of pines for lining its nest. The birds may lay anywhere from two to five eggs, but three is the most common number. The female may sometimes line its nest with feathers or down from her breast. (2).

Nest Survey Methods

Use suggested Methods No. 1, 2, and 5. These birds are not found around human habitations nearly as frequently as Great Horned Owls and seem to prefer the seclusion of more isolated areas. Surveying for them will likely require considerable walking through suitable habitats.

Snowy Owl
(Nyctea Nyctea)

Fig. 109. Snowy Owl

Nest and Habitat Characteristics

This great white owl, one of the largest and most powerful, enjoys a wide circumpolar distribution throughout the Arctic regions of both hemispheres. It breeds north of the limits of trees on the Arctic tundras as far north as explorers have found suitable land that is not covered with perpetual ice and snow, and where it can find suitable food supply. It is by no means evenly distributed or universally abundant anywhere, on account of the periodic fluctuations in its food supply. In some regions, its abundance appears to be linked with the abundance of its favorite food, the lemming.

The nests of the Snowy Owl are ordinarily placed on the ground, usually on the highest and driest point in the surrounding tundra. Occasionally, a nesting site on a rocky ledge or a cliff is chosen. In either case the nest is but a flimsy affair at best, consisting, if on the ground, of a slight hollow scratched out by the birds, and this is usually lined with a little moss and a few feathers; if on top of a ledge or a cliff, the eggs frequently lie on the bare rock, with just enough material around them to keep them in place and prevent them from rolling about.

These owls commonly spend hours quitely perched on the summits of hillocks, where at a distance they look like small patches of snow. (2).

Nest Survey Methods

Use suggested Method No. 4. Widespread areas can only be surveyed by aircraft in remote regions such as Alaska. This is best done by systematically examining all elevated areas on the tundra for the tell-tale white plumages of the birds that may be either perched or sitting on flimsy nests.

Burrowing Owl
(Speotyto cunicularia)

Fig. 110. Burrowing Owl at prairie dog hole used for nest site.

Nest and Habitat Characteristics

This is the only small owl that habitually perches on the ground. They commonly use the burrows of prairie dogs as nesting sites and seen at distance, they somewhat resemble prairie dogs standing on top their mounds.

These owls are migratory in the northern part of their range, returning to their habitual nesting areas by mid-April. They often nest close to civilization and are able to live compatibly with man's activities so long as prairie dog burrows or other rodent holes are not all plowed under. It is not uncommon to see them living in prairie dog colonies within city limits, with housing developments nearby.

The species occurs on the plains and in unforested areas from British Columbia south through Baja California. They were formerly very common but numbers are gradually decreasing, probably due largely to a gradual disappearance of prairie dog colonies because of man's activities. (9).

Nest Survey Methods

Use suggested Method No. 4. With the use of binoculars or spotting scopes these birds are readily visible on open deserts or prairies. While a few isolated pairs or small colonies will be missed that are scattered through brushy areas, they are still probably the easiest of the owls to survey because, early in the mornings and late afternoons they will invariably be sitting out on prairie dog mounds or on fenceposts, about to commence their search for large insects or other prey.

Screech Owl
(Otus asio)

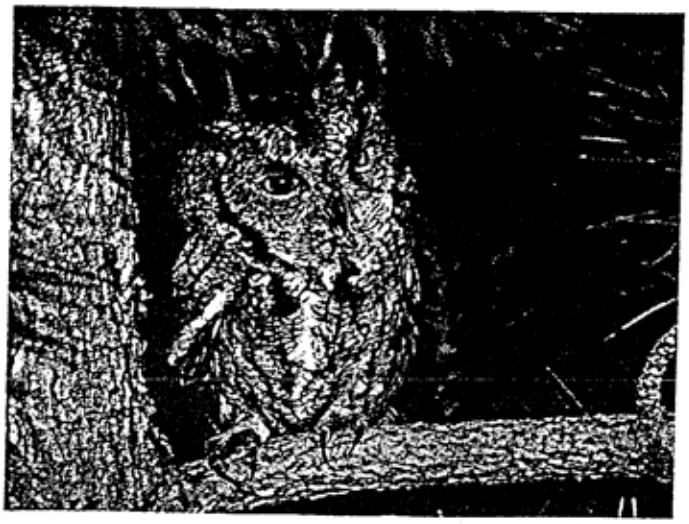


Fig. 111. Screech Owl.

Nest and Habitat Characteristics

Various races of the Screech Owl are found throughout the West. They apparently are not migratory and remain paired throughout the year. They are commonly found in wooded areas along stream bottoms where they utilize woodpecker holes for roosting and nesting. They also live in pine-clad hills up to about 8,000 feet elevation and also live in cavities in foothill stands of junipers. In the Southwest they utilize flicker holes in saguaro cacti as nesting sites.

They often remain in the same territory for several years, which may not be larger than 300 yards across. These birds are strictly nocturnal and are, therefore, more often heard than seen. (2).

Nest Survey Methods

Use suggested Methods No. 3 and 5. In surveying for this species a systematic search for and checking of flicker and woodpecker holes will be necessary. As you find each hole, rap the tree several times with a stick. If an owl is present, it will usually stick its head out of the hole to see who the intruder is. However, females incubating eggs may sit tight and refuse to show themselves. Close examination of each individual hole is too time consuming for anything but special research projects. Taped calls are often used to good advantage in soliciting responses at night.

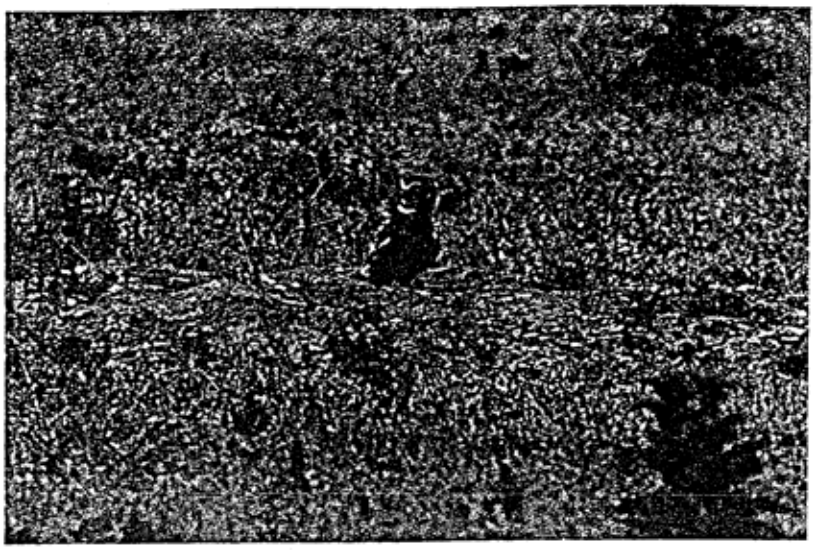


Fig. 112. Burrowing Owl on typical nesting burrow in prairie dog colony.

Fig. 113. Screech Owl nest in a flicker hole in a tree.

Saw-whet Owl
(Aegolius acadicus)

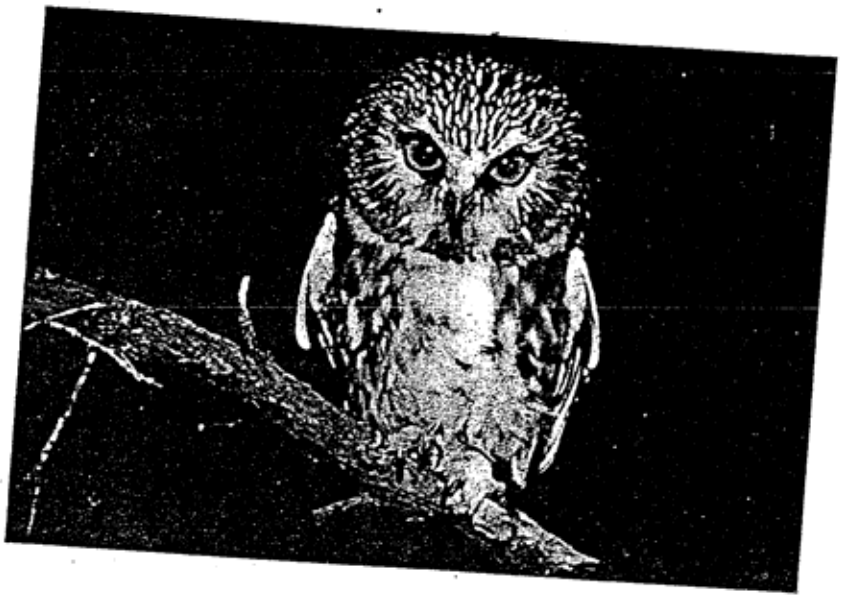


Fig. 114. Saw-whet Owl.

Nest and Habitat Characteristics

The wide-ranging Saw-whet Owls, named for their distinctive call notes, are birds of the Sonoran to Transition Zones. They are scattered through the foothills in both coniferous and deciduous tree stands and are also occasionally found living in cottonwoods along river bottoms. They sit quietly, resting by day in clumps of pines, cottonwoods, or willow thickets, escaping notice by merely remaining motionless. They are very tame, often letting humans approach to within a few feet.

They frequently roost in natural cavities or woodpecker holes where they are seldom observed unless someone or something bumps their tree or raps it with a stick. They utilize the same kinds of cavities as nesting sites, with courtship starting in February and continuing through March.

Nest Survey Methods

Use suggested methods 3 and 5.

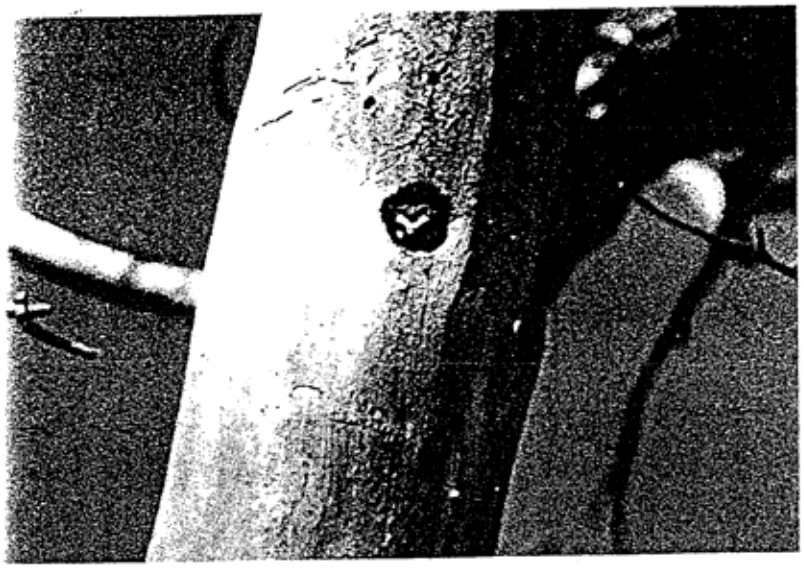
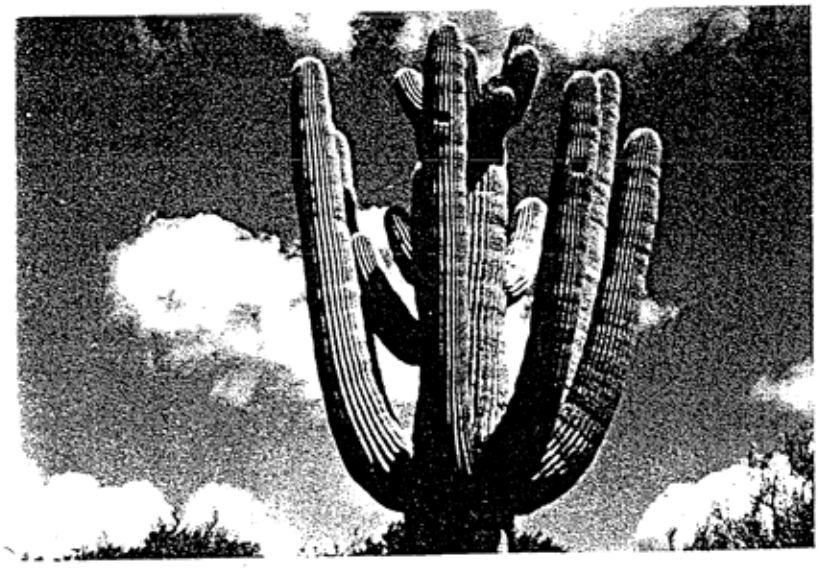


Fig. 115. Saw-whet Owl at a nest site, an old hole in a cottonwood tree.



ig. 116. Flicker holes in saguaro cacti are common esting sites for Elf Owls and Screech Owls in the South-est.

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Pygmy Owl
(Glaucidium gnoma)

g. 117. Pygmy Owl

Habitat Characteristics

le Pygmy Owls are widespread through western mountains from
outh to Baja California. The birds are probably non-migratory
seek lower elevations in winter. The Pygmies range higher into
tains than the Saw-whet and Flammulated Owls, commonly up to
housand feet, and are active by day instead of being almost
nocturnal as are the other two owls. The call of the Pygmy,
olding of chickadees or juncos and other species, alarmed by
nce, are the best clues for anyone hoping to make field
ons of these interesting mountain owls. (2).

other small owls except the Burrowing Owl, these birds also
oodpecker holes or natural cavities, usually in coniferous
Three to four white eggs are laid in May or June.

y Methods

ted Methods 3 and 5. Since these owls usually sit tight
tree trunk or hide in cavities during the day, they are
ult to find and are most often found accidentally while
the forest. Most small birds scold angrily when they find
and one of the best clues to their presence is the angry
small birds that we sometimes hear in the forest.

the Pygmy Owl is easily imitated, and is effective in
these birds. Some field workers use the call of this owl
small perching birds for study. By imitating its call,
n attract small birds to within very close range.

Elf Owl
(Micrathene whiteneyi)

Fig. 118. Elf Owl in nesting cavity in sycamore tree.

Nest and Habitat Characteristics

The chief haunts of the Elf Owl are the low, hot, dry Lower Sonoran plains of the river bottoms and the adjacent tablelands of the Southwest, primarily in Arizona. They are not limited to the saguaro cactus belts, as many have thought, but may also be found in canyons where walnut, live oak, sycamore, and cottonwood grow, sometimes in broken, high country. (2).

The best-known nesting sites are in woodpecker or flicker holes in saguaro cacti, but they also nest in holes in deciduous trees in adjacent areas. The most common number of eggs laid is three, but from two to five eggs are normal. After starting to lay, they usually lay one egg every other day.

Nest Survey Methods

Use suggested Methods No. 3 and 5. Searches for owls in old woodpecker holes or natural cavities is always interesting. Many species of small owls, as well as many other small birds, use woodpecker and flicker holes for nesting. Birds ranging from Sparrow Hawks to Ash-throated Flycatchers may stick their heads out to see who the intruder is.

Flammulated Owl
(Otus flammeolus)

Fig. 119. Flammulated Owl.

Nest and Habitat Characteristics

This pretty and gentle little owl is quite widely distributed in mountainous regions from southern British Columbia and Idaho southward through Mexico. However, it still appears to be one of the least commonly observed owls of the smaller species. So far as presently known, they are more common in mountainous regions, from 6,000 to 10,000 feet in elevation.

The Flammulated Owl is the only small owl in North America with dark eyes. It is rarely observed since it rests during the day, roosting near the trunk of pine or fir trees. Conifers, including juniper and pinyon pine, are its predominant habitat. Eggs are normally laid in late May or early June, possibly earlier in southern latitudes, usually in old woodpecker holes. (2).

Nest Survey Methods

Use suggested Methods 3 and 5. The most feasible method to locate them during the breeding season is to be afield after dark and listen for their ventriloquistic, single hoots, which follow one after another, repeated endlessly, and when they have been heard, to work the hillsides systematically in search of nesting places.

Barn Owl
(Tyto alba)

Fig. 120. Barn Owl

Nest and Habitat Characteristics

Nesting sites of the Barn Owl are quite variable and include all sorts of places, including holes and cavities in clay banks and cliffs, burrows under ground enlarged to suit their needs, natural hollows in trees, in the sides of old wells, abandoned mining shafts, in silos, barns, abandoned houses, and in the top of church steeples. Nests have even been found in exposed and unprotected places such as on flat roofs of buildings. All nests examined by the author have been in old buildings, barns, silos, water towers, or in clay banks or cliffs. They were reported by Bendire in 1892 as nesting in deserted burrows of badgers in Arizona. It is believed that the owls themselves may enlarge cavities in clay banks or ground burrows to suit their needs, using their powerful claws. (2).

In most cases, eggs are merely laid on any rubbish or debris that is present in the cavity where they are nesting. However, if the nest is in a barn or house, they may pull together some sticks, straw, or other rubbish to form a sort of nest base. The average number of eggs laid is from five to seven and up to eleven eggs is not uncommon. The eggs are pure white and mostly ovate in shape.

Nest Survey Methods

Barn Owls are most frequently located by searching old buildings, barns, silos, or similar structures where large cavities may be available for a nest. In Utah they seem to be found mostly in silos, barns, old cement plants, or abandoned mining buildings. However, in northern Colorado, they have been predominantly found nesting in cavities in clay banks and cliffs. Reasons for local preferences are unclear, so all potential types of nesting sites should be examined when searching for this species. Whenever Barn Owls are suspected of nesting in clay banks or cliffs, the biologist can easily check by examining the ground under all potential or suspected cavities for pellets, which tend to have a rather dark, amorphous shape when compared to the rather cylindrical shape for Great Horned, Long-eared, or Short-eared Owls. Such pellets will also be found in abundance at any other nesting site.

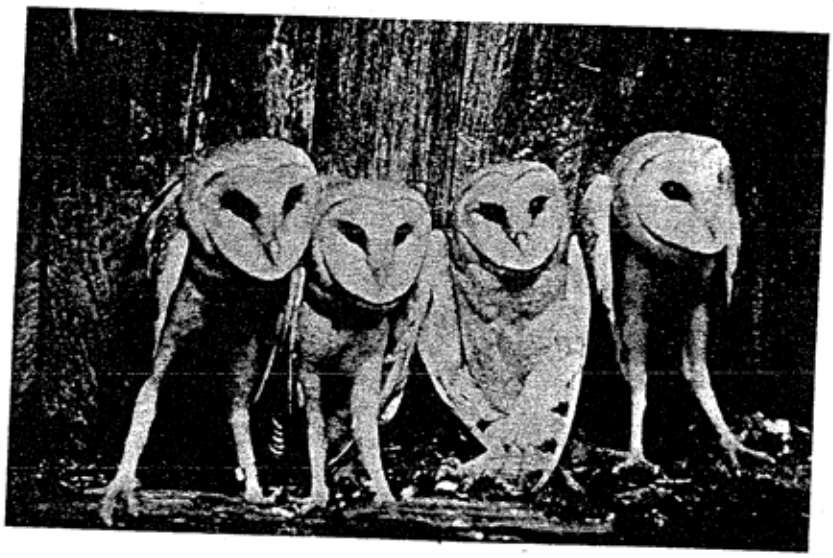

Fig. 121. Young Barn Owls at nest site in old barn.

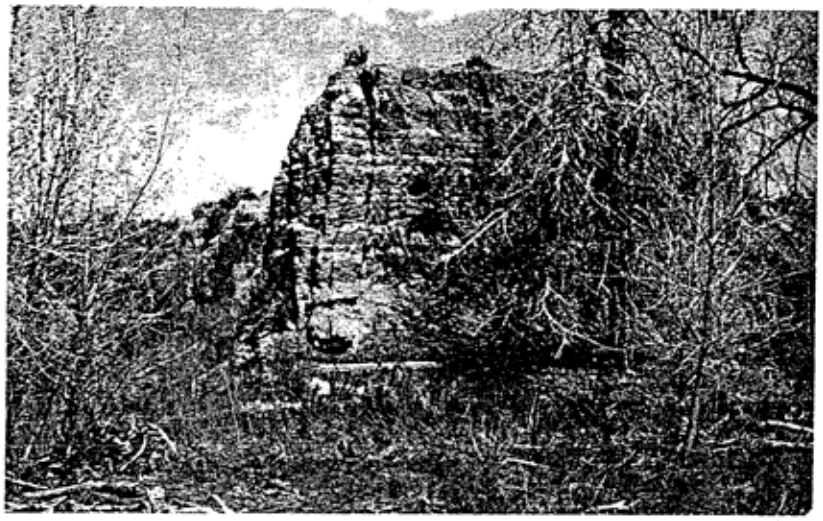

Fig. 122. Cavities in clay banks such as shown here are frequently used as nesting sites by Barn Owls.

Fig. 123. These Barn Owls were nesting in a clay-shale bank in northern Colorado.

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WESTERN STATES IN WHICH BIRDS OF PREY NEST

SPECIES	AL	AZ	CA	CO	ID	MO	NV	NM	OR	UT	WA	WY
Turkey Vulture	X	X	X	X	X	X	X	X	X	X	X	X
Black Vulture		X						X				
California Condor			X									
White-tailed Kite			X									
Mississippi Kite				X								
Swallow-tailed Kite												
Everglade Kite												
Goshawk	X	X	X	X	X	X	X	X	X	X	X	X
Cooper's Hawk	X	X	X	X	X	X	X	X	X	X	X	X
Sharp-shinned Hawk	X	X	X	X	X	X	X	X	X	X	X	X
Marsh Hawk	X	X	X	X	X	X	X	X	X	X	X	X
Rough-legged Hawk	X											
Ferruginous Hawk		X	X	X	X	X	X	X	X	X	X	X
Red-tailed Hawk	X	X	X	X	X	X	X	X	X	X	X	X
Red-shouldered Hawk			X									
Swainson's Hawk	X	X	X	X	X	X	X	X	X	X	X	X
Broad-winged Hawk												
Harlan's Hawk				X	X	X						X
Harris's Hawk		X	X									
Black Hawk		X						X				
Zone-tailed Hawk		X	X					X				
White-tailed Hawk												
Short-tailed Hawk												
Gray Hawk		X										
Golden Eagle	X	X	X	X	X	X	X	X	X	X	X	X

Gyrfalcon	X					X						
Prairie Falcon		X	X	X	X	X	X	X	X	X	X	X
Peregrine Falcon	X	X	X	X	X	X	X	X	X	X	X	X
Pigeon Hawk (Merlin)	X	X	X	X	X	X	X	X	X	X	X	X
Sparrow Hawk (Am. Kestrel)	X	X	X	X	X	X	X	X	X	X	X	X
Aplomado Falcon		X										
Screech Owl		X	X	X	X	X	X	X	X	X	X	X
Great-horned Owl	X	X	X	X	X	X	X	X	X	X	X	X
Long-eared Owl		X	X	X	X	X	X	X	X	X	X	X
Short-eared Owl	X	X	X	X	X	X	X	X	X	X	X	X
Barn Owl		X	X	X	X	X	X	X	X	X	X	X
Snowy Owl	X											
Barred Owl				X	X	X						X
Spotted Owl		X	X	X	X			X	X	X	X	
Great Gray Owl	X		X		X	X			X		X	X
Hawk Owl	X											
Burrowing Owl		X	X	X	X	X	X	X	X	X	X	X
Boreal Owl	X											
Saw-whet Owl		X	X	X	X	X	X	X	X	X	X	X
Whiskered Owl		X										
Flammulated Owl		X	X	X	X		X	X	X	X	X	X
Pygmy Owl		X	X	X	X	X	X	X	X	X	X	X

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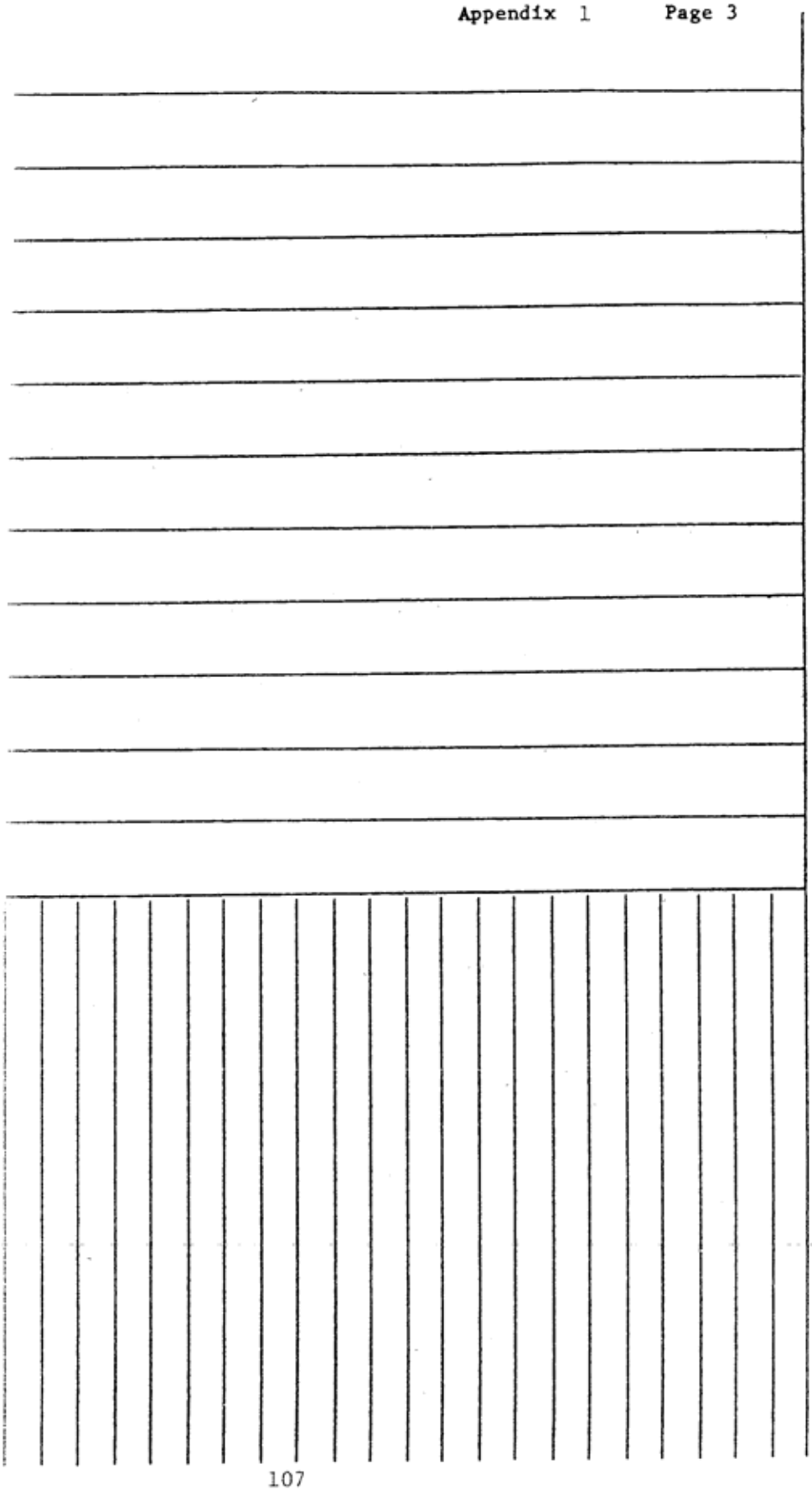
WESTERN STATES IN WHICH BIRDS OF PREY NEST

SPECIES	AL	AZ	CA	CO	ID	MO	NV	NM	OR	UT	WA	WY
Elf Owl		X	X					X				
Ferruginous Owl		X										



RAPTOR NESTING SITE PREFERENCES

SPECIES	Location of Nest				
	Ledges/Holes in Sheer Cliffs	On Low Rocky Bluffs	On/In Ground	On Man-Made Structures	In Trees, Cactus or Bushes
Turkey Vulture	X				
Black Vulture	X			X	
California Condor	X				
White-tailed Kite					X
Mississippi Kite					X
Goshawk					X
Cooper's Hawk					X
Sharp-shinned Hawk					X
Marsh Hawk			X		
Rough-legged Hawk			X		
Ferruginous Hawk		X	X	X	X
Red-tailed Hawk	X	X			X
Red-shouldered Hawk					X
Swainson's Hawk					X
Harlan's Hawk					X
Harris' Hawk					X
Black Hawk					X
Zone-tailed Hawk					X
Gray Hawk					X
Golden Eagle	X				X
Bald Eagle	X				X
Osprey	X (pinnacles)				X
Caracara					X

RAPTOR NESTING SITE PREFERENCES

SPECIES	Location of Nest				
	Ledges/Holes in Sheer Cliffs	On Low Rocky Bluffs	On/In Ground	On Man-Made Structures	In Trees, Cactus or Bushes
Gryfalcon	X	X			
Prairie Falcon	X				
Peregrine Falcon	X				X
Pigeon Hawk					X
Sparrow Hawk	X				X
Aplamado Falcon					X
Screech Owl					X
Great-horned Owl	X	X			X
Long-eared Owl			X		
Short-eared Owl				X	
Barn Owl	X		X		
Snowy Owl					X
Barred Owl					X
Spotted Owl	X				X
Great Gray Owl					X
Hawk Owl			X		
Burrowing Owl					X
Boreal Owl					X
Saw-whet Owl					X
Whiskered Owl					X
Flammulated Owl					X
Pygmy Owl					X
Elf Owl					

RAPTOR NESTING SITE PREFERENCES

SPECIES	Location of Nest				
	Ledges/Holes in Sheer Cliffs	On Low Rocky Bluffs	On/In Ground	On Man-Made Structures	In Trees, Cactus or Bushes
Ferruginous Owl					X

TERRITORIAL REQUIREMENTS OF BIRDS OF PREY

SPECIES	AVERAGE TERRITORY OR RANGE	
	SQ. MI.	DIAMETER (mi.)
Goshawk	1.0 - 4.0	1.0 - 3.0
Cooper's Hawk	1.0 - 3.0	1.0 - 3.0
Sharp-shinned Hawk	1.0 - 3.0	1.0 - 3.0
Marsh Hawk	1.5 - 2.0	1.5 - 2.0
Rough-legged Hawk	.24-19.2	.5 - 8.0
Ferruginous Hawk	1.0 - 3.0	1.0 - 2.5
Red-tailed Hawk	1.5 - 3.5	2.0 - 2.5
Red-shouldered Hawk	1.5 - 3.5	2.0 - 2.5
Swainson's Hawk	1.5 - 2.0	1.5 - 2.5
Black Hawk	.5 - 2.0	.5 - 2.0
Zone-tailed Hawk	1.0 - 3.0	1.0 - 3.0
Golden Eagle	8.0 -10.0	3.0 - 5.0
Bald Eagle	2.0 - 6.0	1.0 - 5.0
Osprey	3.0 - 8.0	.5 - 3.0
Prairie Falcon	2.0 - 5.0	1.5 - 5.0
Peregrine Falcon	3.0 -10.0	3.0 - 8.0
Pigeon Hawk (Merlin)	1.0 - 2.0	1.0 - 2.0
Sparrow Hawk (Am. Kestrel)	.2 - .6	.5 - .8
Great Horned Owl	1.5 - 2.0	1.0 - 2.8
Long-eared Owl	.5 - 1.0	.5 - 1.0
Short-eared Owl	.5 - 1.0	.5 - 1.0
Barn Owl	.3 - 1.0	.3 - 1.0
Burrowing Owl	.16- .62	.20- .36

NESTING PHENOLOGY OF BIRDS OF PREY

SPECIES	Nest Building	Egg Laying	Incubation	Hatching	Fledging
Turkey Vulture		4-1 to 4-10	4-1 to 5-22	5-14 to 5-22	8-1 to 8-8
Black Vulture		3-3 tp 3-7	3-3 to 4-15	4-11 to 4-15	7-25 to 7-29
California Condor		2-23 to 2-25	2-23 to 3-22	3-20 to 3-22	9-18 to 9-20
White-tailed Kite					
Mississippi Kite	4-18 to 5-10	4-24 to 5-20	4-24 to 6-20	5-24 to 6-20	
Swallow-tailed Kite		4-15 to 5-15	4-15 to 6-9	5-6 to 6-9	
Everglade Kite				4-20 to 5-5	5-20 to 6-5
Goshawk		4-10 to 5-5	4-19 to 6-12	5-27 to 6-12	8-11 to 8-27
Cooper's Hawk	4-15 to 5-7	4-20 to 5-11	4-26 to 6-22	6-1 to 6-22	7-4 to 8-26
Sharp-shinned Hawk		5-30 to 6-15	6-8 to 7-9	7-2 to 7-9	7-26 to 8-1
Marsh Hawk	4-2 to 4-7	4-14 to 4-19	4-22 to 4-27	5-18 to 5-23	6-17 to 6-26
Rough-legged Hawk					
Ferruginous Hawk	3-10 to 3-16	3-17 to 4-1	3-21 to 5-21	4-16 to 5-21	6-4 to 7-2
Red-tailed Hawk	2-6 to 3-25	3-5 to 4-21	3-23 to 5-2	4-6 to 5-23	5-16 to 7-1
Red-shouldered Hawk	2-2 to 3-5	3-8 to 4-17	3-8 to 5-19	4-9 to 5-19	5-20 to 7-1
Swainson's Hawk	4-13 to 5-9	5-13 to 6-15	5-17 to 6-28	6-16 to 6-28	7-16 to 7-26
Broad-winged Hawk	5-7 to 5-17	5-18 to 5-25	5-22 to 5-29	6-12 to 6-23	7-11 to 7-29
Harlan's Hawk					
Harris's Hawk					
Black Hawk	3-15 to 4-15	4-15 to 5-15	5-15 to 6-10	5-20 to 6-20	6-25 to 7-25
Zone-tailed Hawk	3-25 to 4-20	4-20 to 4-27	4-24 to 5-30	5-24 to 7-1	6-20 to 7-25
White-tailed Hawk					
Short-tailed Hawk	3-10 to 4-8	3-14 to 4-10	3-16 to 4-30	4-5 to 5-1	
Gray Hawk					

NESTING PHENOLOGY OF BIRDS OF PREY

SPECIES	Nest Building	Egg Laying	Incubation	Hatching	Fledging
Golden Eagle	2-2 to 2-26	3-6 to 3-30	3-10 to 5-14	4-2 to 5-14	6-7 to 6-21
Bald Eagle	2-1 to 2-20	2-12 to 2-26	3-16 to 5-1	4-20 to 5-1	6-26 to 7-6
Osprey	4-22 to 5-31	5-21 to 6-7	5-25 to 7-10	6-23 to 7-10	7-11 to 8-1
Caracara					
Gyrfalcon		5-15 to 6-20	5-19 to 7-23	6-17 to 7-23	
Prairie Falcon		4-20 to 5-1	4-28 to 6-6	5-26 to 6-6	7-2 to 7-15
Peregrine Falcon		3-21 to 4-16	3-23 to 5-16	4-22 to 5-16	6-1 to 6-26
Merlin (Pigeon Hawk)		5-20 to 6-15	5-25 to 6-20	6-10 to 7-10	7-20 to 7-30
American Kestrel (Sparrow Hawk)	4-10 to 5-1	4-27 to 6-1	5-1 to 6-3	5-27 to 6-30	6-25 to 7-28
Aplomado Falcon					
Screech Owl	3-10 to 3-24	3-15 to 3-27	3-19 to 4-30	4-17 to 4-30	5-14 to 5-27
Great-horned Owl	1-1 to 2-30	1-20 to 4-10	1-25 to 5-12	2-27 to 5-12	3-31 to 6-17
Long-eared Owl					
Short-eared Owl	3-6 to 4-12	3-28 to 5-3	4-2 to 5-28	4-25 to 6-28	6-1 to 7-29
Barn Owl	1-6 to 4-10	2-6 to 5-18	2-14 to 6-17	3-4 to 6-17	4-28 to 7-23
Snowy Owl	5-15 to 6-1	5-25 to 6-10	5-25 to 7-12	6-25 to 7-12	7-16 to 8-5
Barred Owl		3-20 to	3-24 to	4-14 to	
Spotted Owl	3-20 to 4-10	3-30 to 4-20	4-1 to 6-2	5-5 to 6-2	
Great Gray Owl		4-4 to 6-15	4-12 to 7-12	5-17 to 7-12	
Hawk Owl		3-20 to 5-5	3-20 to 6-7	4-26 to 6-7	
Burrowing Owl	4-17 to 5-25	4-30 to 6-6	5-1 to 6-17	6-4 to 6-17	7-3 to 7-10
Boreal Owl					
Saw-whet Owl	3-2 to 4-30	4-1 to 6-7	4-1 to 7-3	4-21 to 7-3	5-21 to 8-37
Whiskered Owl					

NESTING PHENOLOGY OF BIRDS OF PREY

SPECIES	Nest Building	Egg Laying	Incubation	Hatching	Fledging
Flammulated Owl	4-22 to 5-12	5-18 to 6-4	5-20 to 7-10	6-14 to 7-10	
Pygmy Owl		4-26 to 5-10			
Elf Owl		5-15 to 5-30	5-23 to 6-23	6-6 to 6-23	
Ferruginous Owl					

RAPTOR INVENTORY DATA SHEET
[for field notebook (looseleaf)]

Observer _____ Nest Number _____

Date of Observation _____ Species _____

Land Ownership: P S BLM Location: T____ R_____ Sec._____

Description of Nest Site:

Nest Substrate _____

Height of Substrate _____

Height of Nest Above Ground____

Active_____ Inactive_____

No. of Eggs or Young_____

Exposure_____

Elevation_____

Vegetative Type_____

(Topographic Map)

Remarks:

(Photograph)

GPO 845-735

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